

REMARKS

The Office Action, dated October 12, 2007, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Following the current amendment, claims 1-19 are currently pending for consideration, of which claims 1 and 16-19 are independent. In particular, claims 1, 5, 11, and 17-19 have been amended to more particularly point out and distinctly claim the invention. It is respectfully submitted that the present amendment added no new subject matter to the present application and serves only to more particularly point out and distinctly claim the invention. Applicants urge that all grounds for rejection in the Office Action have been addressed and that the present application is currently in condition for allowance in view of the amendment and the following arguments. Therefore, entry of the amendment and reconsideration of claims are respectfully requested.

Claim Rejections under 35 U.S.C. §103(a)

The Office Action rejected claims 1-19 under 35 U.S.C. 103(a) as being obvious over US Patent No. 6,452,541 (Zhao), in view of US Patent No. 6,016,322 (Goldman) and US Patent No. 6,405,047 (Moon). The Office Action took the position that Zhao disclosed all of the features of these claims, but conceded that Zhao failed to disclose steps of determining of likely location relative to the station, a delay based on the determined likely location, a more accurate location determination at the user equipment, and the location determined based on information signaled from entities of positioning

system and assistance data signaled from the station of the communication system.. The Office Action asserted that Goldman disclosed these features. The Office Action further conceded that Zhao in view of Goldman failed to disclose a step of determining an estimate of the delay between the transmission of a signal from the station and reception of signal at the mobile user equipment, but the Office Action asserts that this deficiency is cured by Moon. Applicants submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features recited in any of the pending claims.

Claim 1, from which claims 2-15 depend, is directed to a method that includes determining a likely location of mobile user equipment relative to a station. An estimate of a delay between transmission of a signal from the station and reception of the signal at the mobile user equipment is determined based on the determined likely location. Assistance data from the station is signaled to the mobile user equipment. In particular, this assistance data includes information about the timing of a positioning system. Then, a more accurate location determination is determined at the user equipment based on signals from the entities of the positioning system, the assistance data and the estimated delay. The location is determined based on information signaled from entities of a positioning system and assistance data signaled from the station of the communication system.

Independent claim 16 relates to a positioning system that includes entities configured to signal information, and in this configuration, that mobile user equipment may receive and use the information from the entities when determining its location. The

system further includes a station of a communication system configured to transmit information signals to the mobile user equipment. Continuing with the system, a location estimator is configured to provide an estimate of the likely location of the mobile user equipment relative the station. The system further includes a processor configured to provide an estimate of the delay between transmission of an information signal from the station and reception of the information signal at the mobile user equipment based on the estimated location. A location determination processor in the system is configured to determine the location of the mobile user equipment based on signals from the entities of the position system, assistance data from the station, the assistance data including information about the timing of the positioning system and the estimate of the delay.

Independent claim 17 recites an apparatus that includes a first receiver configured to receive information signals from entities of a positioning system for use in location determinations by the mobile user equipment. Furthermore, a second receiver is configured to receive signals from a station of a communication system. Location determination circuitry is configured to determine the location of the mobile user equipment based on signals from the entities of the position system, assistance data signal received from the station, the assistance data including information about the timing of the positioning system, and a computed difference between the time of transmission of the assistance data signal from the station and the time of reception of the assistance data signal at the mobile user equipment, the difference being computed based on an estimated likely location of the mobile user equipment relative to the base station.

Independent 18 is directed to a system that includes a positioning system that includes entities configured to signal information in a configuration in which mobile user equipment can receive and use the information from the entities when determining its location. The system further includes a station of a communication system configured to transmit information signals to the mobile user equipment. The system also has location estimation means for providing an estimate of the likely location of the mobile user equipment relative the station. A processor means provide an estimate of the delay between transmission of an information signal from the station and reception of the information signal at the mobile user equipment based on the estimated location. Also, location determination means in the system determine the location of the mobile user equipment based on signals from the entities of the position system, assistance data from the station, the assistance data including information about the timing of the positioning system and the estimate of the delay.

Independent claim 19 relates to an apparatus that includes a first receiver means for receiving information signals from entities of a positioning system for use in location determinations by the mobile user equipment. A second receiver means receives signals from a station of a communication system. Location determination means for determining the location of the mobile user equipment based on signals from the entities of the position system, assistance data signal received from the station, the assistance data including information about the timing of the positioning system, and a computed difference between the time of transmission of the assistance data signal from the station and the time of reception of the assistance data signal at the mobile user equipment. The

difference is computed based on an estimated likely location of the mobile user equipment relative to the base station.

Applicants submit that each of the above claims recites features that are neither disclosed nor suggested in any of the cited references.

As previously discussed, Zhao is directed to a network assisted satellite positioning system based location scheme (see col. 1, lines 62 to 65 of Zhao). Zhao also describes transmitting assistance messages via a network to mobile receivers and discloses transmitting the assistance messages with a GPS time. Indication of a delay occurring between the time the GPS time is applied to the assistance message and the time the assistance message is received at the mobile receiver is disclosed and it is disclosed that this delay will be variable according to the location of the mobile receiver. According to Zhao, a communication network periodically determines a roundtrip delay between a base station and a mobile station and this can be used to determine the delay incurred by the assistance messages, and used to compensate for the time required to propagate the assistance message to the mobile receiver for example, by adding the delay to the GPS time stamped onto the assistance message (see, for example, column 2, lines 10 to 58 and column 4, lines 19 to 24 of Zhao).

The Office Action took the position that Zhao disclosed all of the features of these claims, but conceded that Zhao failed to disclose steps of determining of likely location relative to the station, a delay based on the determined likely location, a more accurate location determination at the user equipment, and the location determined based on information signaled from entities of positioning system and assistant data signaled from

the station of the communication system. The Office Action asserted that Goldman disclosed these features. In particular, the Office Action references Goldman at See column 5, lines 6-19, and column 6, lines 18-27. Applicants have carefully reviewed Goldman and respectfully note that that it is generally directed to a wireless mobile telephone network having a service area including one or more base stations and multiple mobile stations. The base and mobile stations are in communication with a Global Positioning System (GPS). A mobile station communicates with a particular base station through a TDMA radio communication link. Each mobile station is assigned one time slot for transmitting data to the base station and a second time slot for receiving data from the base station. The mobile station and the base station exchange their respective GPS positions. A transmitting station determines a time delay based on the receiving station's GPS position. This time delay is used to advance a transmission to the receiving station so that it is received at the receiving station at a time that coincides with the start of the time slot.

The Office Action further conceded that Zhao in view of Goldman failed to disclose a step of determining an estimate of the delay between the transmission of a signal from the station and reception of signal at the mobile user equipment, but the Office Action asserts that this deficiency is cured by Moon at column 5, lines 18-28. Applicants respectfully note that Moon generally relates to device for tracking a mobile station's position in a mobile communication system. The disclosed device includes a receiver for receiving single tone signals and positional information transmitted from at least three base stations; a tone phase measurer for measuring phase differences,

dependent on propagation delay, of the tone signals on the basis of a base station's system reference time before propagation delay; and a mobile station's position calculator for calculating positional information of the mobile station using the measured phase differences and the positional information of the base stations.

As an initial observation, Applicants note that the Office Action now relied upon a combination of three different cited references in order to allege that the presently claimed invention was obvious. On the face of it, it would appear that the Office Action was merely arbitrarily combining features from a number of references in order to incorrectly construct the obviousness objection. With an increasing number of references used in an obviousness type rejection, the Examiner has an increased burden to show that the combination is legally correct. *See, for example*, MPEP §2143.01. In particular, *Ibid.*, references should not be combined just because they can be, absent an additional showing. As such, it would appear that the Office Action is applying a improper hindsight analysis to the prior art in light of the teaching of the present application in order to allege that the claimed invention is obvious. In particular, there is no showing in the Office Action explaining a teaching, suggestion, motivation or motivation to combine the three cited references or, otherwise, a general technical trend toward the recitations of the present claims. Accordingly, the rejection of claims 1 and 16-19 is legally improper and should be withdrawn. Reconsideration and allowance of claims 1-19 are respectfully requested.

Moreover, Applicants urge that the rejection is incorrect as the analysis set out in the Office Action is not legally or technically self-consistent. For example, regarding claim 1, Applicants note the following deficiencies in the analysis of the Office Action.

Independent method claim 1 recites the following four steps:

(Step 1) determining a likely location of the mobile user equipment relative to a station;

(Step 2) determining an estimate of a delay between transmission of a signal from the station and reception of said signal at the mobile user equipment based on the determined likely location;

(Step 3) signaling assistance data from the station to the mobile user equipment, said assistance data comprising information about the timing of a positioning system; and

(Step 4) calculating a more accurate location determination at the user equipment based on signals from the entities of the positioning system, the assistance data and said estimated delay, wherein the location is determined based on information signaled from entities of a positioning system and assistance data signaled from the station of the communication system.

As summarized above, the Office Action alleged that Zhao discloses step 3 but does not disclose steps 1, 2 or 4. *See* page 2. The Office Action further alleges that that Goldman discloses steps 1 and 4 but does not disclose step 2. *See* page 3 and the first paragraph on page 4. Continuing at page 4, the Office Action then asserts that Moon discloses step 2.

Applicants respectfully note that a combination of Zhao and Goldman cannot disclose step 4 in the absence of step 2 as step 4 utilizes the information obtained in step 2. More specifically, a combination of Zhao and Goldman does not disclose calculating a more accurate location determination at the user equipment based on said estimated delay, where said estimated delay is a delay between transmission of a signal from station and reception of said signal at a mobile user equipment determined based on likely location of the mobile user equipment relative to the station, as there is no disclosure in either of Zhao or Goldman of the step of determining an estimate of a delay between transmission of a signal from the station and reception of said signal at the mobile user equipment based on the determined likely location. The Office Action conceded that the determination of such an estimated delay is not disclosed in Zhao or Goldman.

In light of the above, it is apparent that the Office Action has assessed features of the presently claimed invention in isolation and has not considered the correlation between the recited method steps and in particular that step 2 utilizes the result of step 1 and step 4 utilizes the result of step 2.

For at least these reasons, Applicants urge that the rejection of claim 1 under 35 U.S.C. §103(a) is technically and legally incorrect because there is no reasonable expectation that the combination of Zhao, Goldman, and Moon would operate without undue experimentation and/or modification. Accordingly, withdrawal of this rejection and allowance of claim 1 is respectfully requested. Applicants further submit that because claims 2-15 depend from claim 1, these claims are allowable at least for the same reasons as claim 1, as well as for the additional features recited in these dependent

claims. Similarly, independent claims 16-19, although different in scope and rejected on separate grounds from claim 1 and in view of separate sections of the cited references, contain similar recitations and should and also allowed on parallel grounds.

In addition to the above-noted is deficiency in the analysis the Office Action, Applicant further urge that the combination of Zhao, Goldman, and Moon, even if they can be legally and technically combined, fail to disclose each and every recitation of claim 1.

In particular, as described above, the Office Action asserted that Goldman discloses the determination of a likely location relative to the station and a delay based on the determined likely location referring to column 5, lines 6 to 19, and column 6, lines 18 to 27. However, it is clearly stated in this and other portions of Goldman that the propagation or time delay that is incurred in transmitting the message between two communication stations is based on the distance between the two stations and that GPS positioning is used to determine the distance between the two stations and hence the time delay. It is further stated through Goldman that the GPS position is an accurate measurement of the location of a station. As such, it is clear from Goldman that actual locations of two stations are measured using the accurate GPS positioning system and these positions are used to determine an accurate measurement of the time delay. This contrasts with the recited embodiment of claim 1 in which a likely location of a mobile user equipment is determined relative to a station, and an estimate of a delay **then** is determined based on the determined likely location. As such, it is apparent that Goldman does not actually disclose either steps 1 or 2 of claim 1. Furthermore, as previously

stated, Goldman cannot disclose step 4, which involves calculating a more accurate location determination based on a likely location and estimated delay time rather than actual locations of stations and accurately measured delay times.

Continuing with the Applicants' analysis of claim 1 vis-à-vis the combination of Zhao, Goldman, and Moon, Applicants urge that Moon does not remedy the above-described deficiencies in Zhao and Goldman. In particular, the Office Action relied upon Moon for disclosing the step of determining an estimate of transmission delay and refers specifically to Moon at column 5, lines 18 to 28. While Moon arguably discusses a delay between a mobile user equipment and a station, there is absolutely no disclosure of estimating the delay based on the determined likely location of the mobile user equipment as recited in claim 1.

For at least these reasons, Applicants urge that the rejection of claim 1 under 35 U.S.C. §103(a) is technically and legally incorrect because the combination of Zhao, Goldman, and Moon does not disclose each and every recitation of claim 1. Accordingly, withdrawal of this rejection and allowance of claim 1 is respectfully requested. Applicants further submit that because claims 2-15 depend from claim 1, these claims are allowable at least for the same reasons as claim 1, as well as for the additional features recited in these dependent claims. Similarly, independent claims 16-19, although different in scope and rejected on separate grounds from claim 1 and in view of separate sections of the cited references, contain similar recitations and should and also allowed on parallel grounds.

In light of the above remarks, Applicants urge it is difficult to see how even with the appliance of hindsight analysis the present invention could be realized based on the cited documents of Zhao, Goldman and Moon. In particular, as described above, even if it somehow possible to split up the claimed features of the present invention and select corresponding features in various portions of the cited documents in order to arrive at some kind of correspondence between the prior art and the presently claimed invention, it is absolutely clear that such an analysis could only be made with the application of hindsight knowledge of the present application.

Based at least on the above, Applicants submit that the cited references fail to disclose or suggest all of the features recited in claims 1-19. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'David D. Nelson', written over a horizontal line.

David D. Nelson
Registration No. 47,818

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

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